Amendments to the Claims

1. (Previously Presented) A method for producing hydrocarbons from syngas in a three-phase catalytic system in which the catalyst comprises solid particles, comprising:

(a) providing a reactor containing the catalyst;

(b) feeding the syngas into the reactor so as to generate a liquid product;

(c) operating the three-phase system in a well-mixed gas flow regime, with a gas Peclet number less than 0.175; and

(d) removing hydrocarbons from the reactor.

2. (Previously Presented) The method according to claim 1 wherein the inlet superficial gas velocity is at least 20 cm/sec.

3. (Previously Presented) The method according to claim 1 wherein the reactor includes a recycle line.

4. (Previously Presented) The method according to claim 1 wherein the process comprises multiple stages and in which each stage may have one or more reactors, and wherein the inlet gas superficial velocity is at least 20 cm/sec and syngas per pass conversion in each reactor is between 35 % and 75 %.

5. (Previously Presented) The method according to claim 4 wherein the overall syngas conversion is at least 90%.

6-13. (Canceled)

14. (Previously Presented) The method according to claim 1 wherein the mole ratio of hydrogen to carbon monoxide in the syngas is between about 0.67:1 and about 2.5:1.

15. (Previously Presented) The method according to claim 1 wherein the hydrocarbons in step (d) comprise C_1 to C_{80+} hydrocarbons.

16. (Previously Presented) The method according to claim 1 wherein the catalyst comprises a supported or precipitated cobalt catalyst.

17. (Previously Presented) A method for operating a Fischer-Tropsch reactor system containing solid catalyst, gaseous feed, and gas and liquid products, comprising maintaining the rates of gaseous feed and liquid withdrawal such that the reactor system is maintained in a well-mixed gas flow regime described by

$$U_G \leq 0.175 D_G/L,$$

where U_G is the inlet superficial gas velocity, L is the expanded slurry bed height, and D_G is the dispersion coefficient.

18. (Previously Presented) The method according to claim 17 wherein the inlet superficial gas velocity is at least 20 cm/sec.

19. (Previously Presented) The method according to claim 17 wherein the expanded slurry bed height is at least 60 % of the total reactor height.

20. (Currently amended) The method according to claim 17 wherein the process comprises multiple stages and in which each stage may have one or more reactors, and wherein the inlet gas superficial velocity is at least 20 cm/sec and syngas per pass conversion in each reactor is between 35 % and 75 %.

21. (Previously Presented) The method according to claim 20 wherein the overall syngas conversion is at least 90%.

22-29. (Canceled).

30. (Previously Presented) The method according to claim 17 wherein the mole ratio of hydrogen to carbon monoxide in the syngas is greater than 0.5:1.

31. (Previously Presented) The method according to claim 17 wherein the mole ratio of hydrogen to carbon monoxide in the syngas is between about 0.67:1 and about 2.5:1.

32. (Previously Presented) The method according to claim 17 wherein the Fischer-Tropsch reactor system produces hydrocarbons comprising C_1 to C_{80+} hydrocarbons.

33. (Previously Presented) The method according to claim 17 wherein the catalyst comprises a supported or precipitated cobalt catalyst.

34-49. (Cancelled).

50. (Cancelled).

51. (Previously Presented) The method according to claim 1 wherein the volume productivity of the catalytic system is at least 350 gHC/kg.cat/hr.

52. (Previously Presented) The method according to claim 17 wherein the volume productivity of the catalytic system is at least 350 gHC/kg.cat/hr.